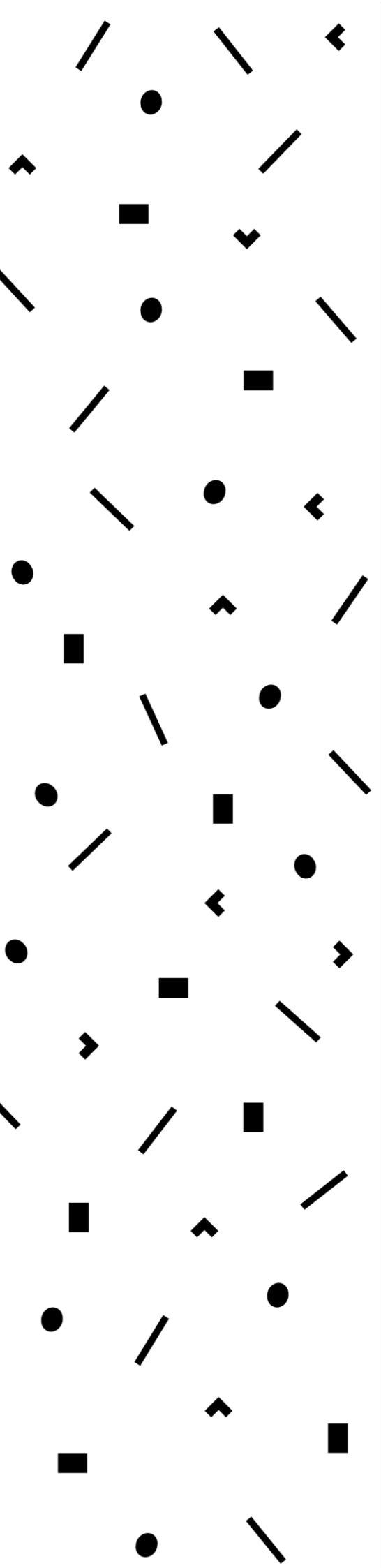

LAMK Lahden ammattikorkeakoulu
Lahti University of Applied Sciences

Improving company performance through implementation of Business Intelligence tools

Implementation of a Microsoft Power BI in a Case Study Company

LAHTI UNIVERSITY OF APPLIED SCIENCES
Faculty of Business Studies
Degree Programme in Information Technology
Thesis
Spring 2018
Edgar Kajava

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KAJAVA, EDGAR:

Improving company performance through implementation of Business Intelligence tools Implementation of a Microsoft Power BI in a Case Study Company

Bachelor's Thesis in Information Technology 36 pages, 5 pages of appendices

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ABSTRACT

This thesis focuses on a case company and company data (e.g. financial metrics) that can be exploited by using and implementing Microsoft Power BI (MS Power BI) as a business tool for analytics and forecasting. With MS Power BI, it is possible to export, filter, and create different visual graphical presentation reports by using a company's raw data and without altering the original source data. The benefits are significant because by using BI tools a company's management can create customized reports quickly and with little effort. Data does not need to be manually updated any more to get real-time information. The source data used in this research was obtained from Google Analytics and Xero, the accounting software.

After implementing the MS Power BI solution, the case company has been able to analyse, present and review its products and services and develop new product and service offerings to meet the ever-changing needs of its clients. The net result has been significant in helping the case company to improve cash flow and bottom line profitability.

In the past, managing cash flow and developing new products and services was a very difficult, time-consuming and complicated process. The case study company also struggled with the accounts receivable process, owing to their clients paying invoices late. MS Power BI, when inspecting the reports from Google Analytics and Xero, clearly highlighted the problem areas and the business was able to respond to the problems.

Keywords: Microsoft Power BI, Business Intelligence, Big Data, improving company's business, reporting.

Lahden ammattikorkeakoulu
Tietojenkäsittelyn koulutusohjelma

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Tietojenkäsittelyn opinnäytetyö, 36 sivua, 5 liitesivua

Kevät 2018

TIIVISTELMÄ

Tässä opinnäytteessä käsitellään yrityksen liiketoimintaa, markkinointia ja nykyisiä taloudellisia mittareita, joita pystytään hyödyntämään ottamalla käyttöön Microsoft Power BI: n (MS Power BI) ja käyttämään sitä analyyttisten ja ennusteiden liiketoiminnan välineenä. MS Power BI: n avulla on mahdollista tuoda, suodattaa ja luoda erilaisia visuaalisia graafisia esitysraportteja, joita hyödynnetään käyttämällä yrityksen raakaa dataa ilman että se vaikuttaa alkuperäiseen lähdetietoon. Yrityksen hyödyt ovat olleet merkittäviä siinä syystä, että BI-työkalujen käyttöönotolla voidaan luoda omia raportteja nopeasti ja vaivattomasti. Merkittävä etu on, että yrityksen ei enää tarvitse päivittää tietolähteitä manuaalisesti reaaliaikaisten tietojen saamiseksi. Tässä tutkimuksessa käytetyt lähdetiedot saatiin Google Analytics -palvelusta ja Xero-kirjanpitosovelluksesta.

MS Power BI:n -ratkaisun toteuttamisen jälkeen case study yritys on voinut analysoida, esittää ja tarkastella tuotteitaan ja palveluitaan, jotta he pystyisivät kehittämään uusia tuotteita ja palveluita vastaamaan asiakkaan muuttuviin tarpeisiin. Yrityksen nettotuloksen tarkkailu on ollut huomattava apu, kun yrityksen kassavirtaa ja kannattavuutta on tarkasteltu.

Aiemmin yrityksen tapa hallita omaa kassavirta ja uusien tuotteiden sekä palveluiden kehittäminen oli erittäin vaikea, aikaa vievä ja monimutkainen prosessi. Case study yritys kamppaili myös myyntisaamisten saamisessa, koska asiakkaat maksoivat laskuja myöhässä. MS Power BI pystyi tarkasti tutkimaan Google Analyticsin ja Xero-raporttien tuloksia, joiden avulla yritys pystyi vastaamaan omiin sisäisiin ongelmiinsa.

Asiasanat: Microsoft Power BI, Business Intelligence, Big Data, yrityksen liiketoiminnan parantaminen, raportointi.

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1 INTRODUCTION

The objective of this thesis is about the implementation of business intelligence (BI) in a case study company. The goal is to understand how the implementation and use of BI, improves business performance, metrics and efficiency. The study will demonstrate concrete evidence of how beneficial BI can be in helping the business enterprise to look back in history and help with forward planning

An important aspect of business planning and forecasting is the need to have a future view of which areas in the business enterprise, resources should be allocated to, to drive business performance. This can be achieved by using existing data sources stored across multiple platforms which is often a very difficult and laborious task. The results will also demonstrate that by examining “big data,” the information gathered can be used for business analytics and presentation.

The research document will also demonstrate how BI as a tool, together with the financial accounting reporting system and various data stores, can work in collaboration with each other, even though the data sources are located in various file locations to conduct business analytics and do real time presentations.

Names, references, materials or any information that could reveal the company’s identity has been removed at the request of the company. For this reason, the company will be referred to as “Company X”.

2 RESEARCH ASSIGNMENT AND CASE STUDY

This research is conducted by collaborating with the case company, who provided and gave permission to use their data, as well as provided access to their business intelligence tools. However, “Company X’s” data will be censored to guarantee the safety of the “Company X’s” business. “Company X” also decides what data can be shown and used for the data analysis.

A live data feed was used to collect the raw data from the “Company X’s” financial administration system.

The thesis focuses on the following research question:

- How does implementing Microsoft Power Business Intelligence (MS Power BI) improve a company’s business?

The finance director of “Company X” has implemented a business intelligence program called MS Power BI. With the program the finance director can immediately see the latest reports without filtering the raw daw data and creating a visual representation manually.

The MS Power BI software is an online service from Microsoft, which allows data to be extracted from various sources without affecting the original source. MS Power BI tool gives a company a solution to access data, filter it, present it, publish and manage it simply yet effectively. The feed data can also be updated automatically, meaning all the current presentations and reports will also be updated to show the latest information without manual work. The MS Power BI tool connects data from multiple diverse sources and programs, into one place and it can be accessed from anywhere. The software can be installed onto a computer or be accessed online from any location by using different browsers. (Microsoft 2018.)

“Company X” also uses an online service called Xero for accounting. The Xero online accounting system offers an affordable solution for a company to handle accounting. With Xero a company can handle finances, billing, upload data from another accounting software, pay salaries, and access reports of the current financial status. (Xero 2018.)

3 LITERATURE REVIEW OF BIG DATA AND BUSINESS INTELLIGENCE

To understand how the collection and storing of data has evolved over the past few decades, to the point where we are now able to exploit the accumulation of data, (i.e. both analog and digital) we need to understand how new developments in technology has evolved over time to enable data extraction, or mining as it has become known today.

3.1 A quick history of Big Data

Over the past few years, the ways of collecting data from clients and potential clients, has grown rapidly as technology has improved and progressed forward, which has forced companies to keep up with the evolving technology. This is referred to as “information explosion”, which in short means a rapidly increasing amount of available information. (Goodluck 2010.)

In summary, it is a way to exploit this information or data that has increased exponentially in terms of volumes. The challenge will always be to find new ways to access this information, which has become easier and faster to do with tools like BI.

About 70 years ago information was stored in physical format (paper documents), which was then archived in data libraries (i.e. company files and records). In the past this information was extremely difficult to process and occupied lot of space. Even if paper documents were easy to manufacture, print and store, accessing the data repeatedly took time and it needed staff to keep up this process (as information became quickly obsolete) and data information could be easily lost in the case of a natural accident, such as fire. In other words, storing data physically was inefficient and expensive. This changed when data was slowly being moved from physical libraries into digital storage units. (Press 2013.)

Digital storing is a much more efficient way to store data and to gain access to it at a later stage. However, it also had its own challenges. Data capacity required big storage units and data still had to be accessed and updated manually and correctly. Technology was not as advanced as today’s technology, such as disk and memory capacities.

To increase data capacity, more data storage units were required. This is known as “problems of the big data”. (Press 2013.)

As technology developed, it became possible to store more data on computers. As processing power increased, computers could process information faster than before. Despite new computers and storage units, it was still a practise to store in four common physical media such as paper, film, optical and magnetic. However, these media still had the same problems as that of other physical storage media. They were unreliable, easy to lose and damage.

In 2003, Peter Lyman and Hal Varian published a study in which they reported that the world produced about 5 exabytes of new information in 2002. 92% of the information was stored on magnetic disks. This shows that physical data storage tools were commonly used and relied on despite their weaknesses. (Lyman & Varian 2003.)

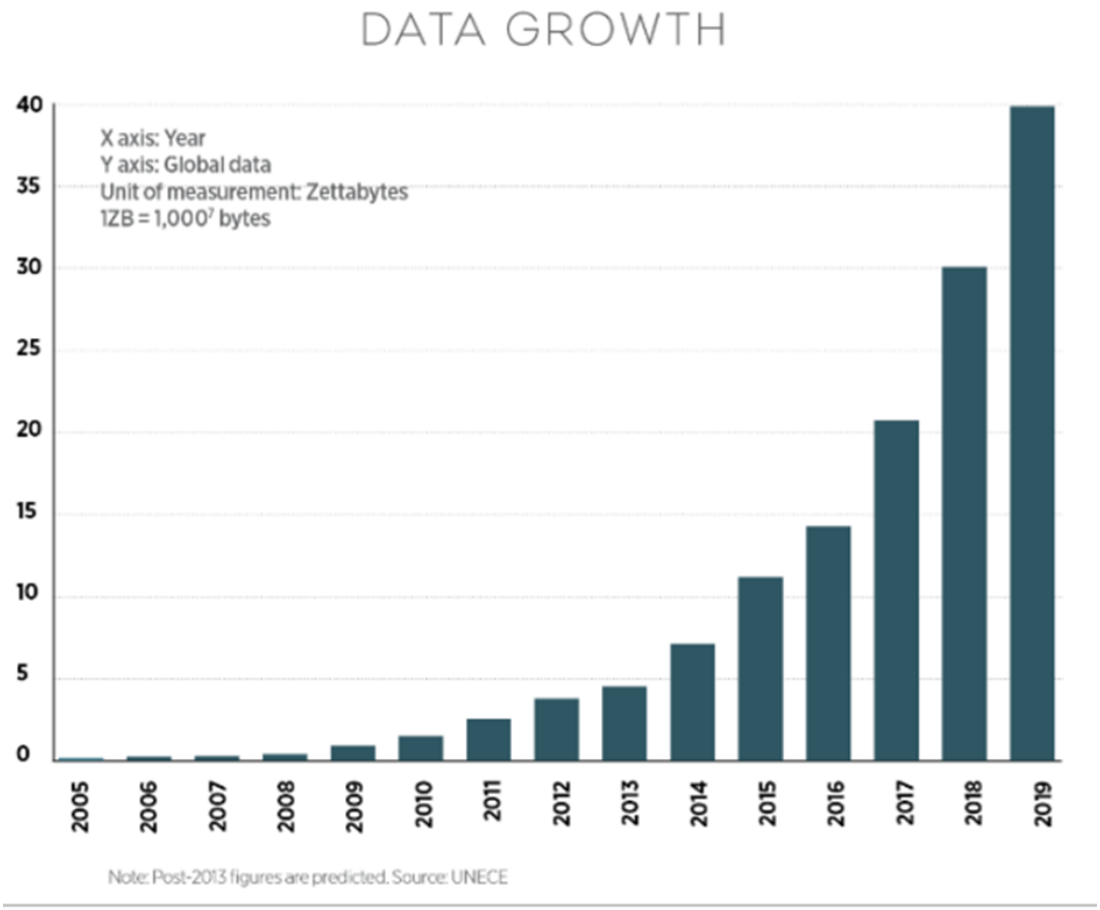

Chart 1: Data Growth Predictions (United Nations Economic Commission for Europe (UNECE). 2013.)

Since 2005, statistics has shown that the amount of data the world has created, will continue to grow rapidly, thanks to many different technological advances and especially the use of social media. This is shown above in Chart 1, which shows data growth predictions from 2005 to 2019. Another important breakthrough in technology is digital storage devices such as cloud services, which offers a much more reliable service compared to physical storage devices.

This all means that data will have to be stored somewhere, where it can be accessed quickly and by anyone who needs it. Big data has changed the way the world works by allowing anyone to create, update, distribute and change data by simply uploading it or sharing it with someone. This can easily be seen on social media, such as Facebook, Twitter, and Instagram services, where users can distribute content and access other users' content.

Companies around the globe are now able to access, store and use the information that is available both physically and digitally. The problem of big data will always be how to use the data efficiently as there is so much data available. The need for systems that can filter, categorize and read big data content, have enabled Business Intelligence systems to be developed and utilized quickly as more and more data is becoming available. (Press 2013.)

3.2 How is Business Intelligence used to present big data?

When data is on a server or harddrive, it has no value, even if it contains relevant and valuable information. The ability to present and use this information is difficult without any tools. The more information a company collects, the greater the need for business solutions. For this reason, it is important to understand, how BI tools work and how they mine information from big data repositories. Understanding BI will also help a company to choose a correct BI tool system to categorize and analyze the data.

BI tools can be grouped into three distinct categories, each supporting different BI styles and capabilities, these are "Guided analysis and reporting", "Self-service BI and analysis" and "Advanced analytics".

3.2.1 Guided analysis and reporting

Typical BI tools like marketing, performance, and key performance indicators are so-called traditional BI styles, where the system is used to perform recurring analyses from specific data. Most commonly these BI tools use sales, examining the sales pipeline, comparing the performance of marketing campaigns and analyzing financial key performance indicators. In the early stages, marketing, performance, and key performance indicator tools were limited and could not be customized according to the needs of the company. Currently, marketing, performance, and key performance indicators tools have been further developed which enables the user to select, filter, compare, visualize and analyze data in different ways. It also enables the user to present the data visually according to their needs. Guided analysis and reporting BI tools require a team to create BI applications, which analyzes and reports categories for end users. The BI tool then uses self-service to display required information, such as reports, performance management, or spreadsheets. These systems also require an IT team to maintain the system with the user base who conducted the analysis and reporting. (Sherman 2018.)

The MS Power BI solution is a very good example of the type of BI tool that allows users to choose where to load data from, and how to filter and present the data. However, the organization will still need a team to manage the data sources for it to function correctly.

3.2.2 Self-service business intelligence and analysis

A self-service BI system uses and performs ad hoc analysis of the data, which is one-time-only or formulation of a recurring analysis. This analysis will also be shared with others within the organization. In a self-service BI system, it allows users to add new or old data and metrics without requiring an IT team to maintain the system. However, the IT team is still needed as there are 3 requirements for a self-service BI system to work correctly. The IT team must manage the data source access based on need, security and privacy rights for the system users to obtain proper privileges when adding data sources. The data that is used by the BI system tool needs to be consumable, as there may be access restrictions in the server or system. Lastly, the user data source must be understandable by the user base, which usually collaborates with the IT team to get a

better understanding of the schemas and data definitions, needed to perform analysis. (Sherman 2018.)

An example of this type of program is Dundas BI Software, which allows users to create/ “build” own reports, run ad-hoc queries and analyze and drill-down into their data and performance metrics. (Software Advice 2018.)

3.2.3 Advanced analytics

The final BI category is advanced analytics. In this category the BI tools used, deals with how to conduct predictive and prescriptive analytical models, which include predictive analytics, statistical modeling, data mining and big data analytics software. The difference to traditional analytical tools is that advanced analytics focuses on forecasting future events and scenarios, allowing businesses to create a simulation of what-if scenarios, which can be used to predict changes in business strategies. Most commonly advanced analytics is used in marketing, healthcare, risk management, and economics (Preslar 2013.)

An example of this type of program is Yellowfin Software that offers to predict the future tools for the company. Its tools allow forecasting which can help the company to predict sales by identifying a consistent pattern in the data. (Yellowfin 2018.)

3.3 Business intelligence system deployment

After choosing a BI system tool, it is important to consider how the user base will access the BI system (front end) and where the BI itself is located and operated (backend). Currently, the most common way to access a BI system is to use a browser-based client interface. Another matter to take into consideration is where the BI application is deployed. It can be accessed from servers on-site, in data centers or private cloud services. (Sherman 2018.)

4 RESEARCH METHODS AND STRUCTURE OF THE CASE STUDY

The study is conducted by making a qualitative case study to find what changed in “Company X’s” business once the business intelligence tool was installed. The key factors for the research effort that will be analysed, is to understand the “Company X’s” current situation by looking at their sales reports, financial reports, inventory reports, as well as website traffic and user base reports. To get the “Company X’s” own perspective and opinions, the head finance director will be interviewed.

The key and important reasons why the MS Power BI was implemented in the first place, and how using this tool has helped “Company X”, was to better utilize historical information and data, to improve the business focus, the business metrics, and business performance.

4.1 Research structure

The interview will be done using a focused (semi-structured) interview, which is needed to get information on a subject from the interviewed person. The objective is to understand the respondent's point of view with open-ended questions. (Jamshed 2014.) In this thesis, this means that the finance director will state his (or her) opinions why MS Power BI was implemented specifically in “Company X”. The answers might therefore not be applicable to other companies as it is a subjective view.

The interview questions for the finance director were the following:

1. Why was MS Power BI implemented?
2. How has MS Power BI changed the data presented to the company?
3. How was data filtered and presented to the company before MS Power BI was implemented?
4. How do you think MS Power BI have been beneficial to the company?

These questions will help the finance director to not only understand the current value, but the need for the BI tool as well as the reason it was implemented and how beneficial it has been to “Company X”. To achieve meaningful results for the research of the thesis, data must be obtained using Power BI and to compare it to the previous raw data that

was obtained from billing and accounting software as was provided by “Company X’s”. finance director.

The research considered that there would be the possibility of errors during the data collection, analysis, and presentation processes, in that for example, the data can be filtered using the wrong filters or presented in the wrong format. In the end, it will also be discussed if the research could have been done differently, if it was revealed that there was material evidence of success during the data collection and analyses.

4.1.1 Understanding the current situation of “Company X”

To understand the current situation of “Company X”, the financial director of “Company X” will be interviewed to understand how “Company X” has managed the business and financial status without the use of a BI tool in the past and into the future using the BI tool. The questions were sent via email so that the interview process could be easily tracked and referred to after the data gathering and analysis, without asking the finance director to repeat answers.

4.1.2 Collection of the existing data and conducting the research

Information will be collected from “Company X” raw data in two different ways, the new method with MS Power BI and the old method, which will require data collection and filtering without any BI tools. Information gathering is started by familiarizing with the Microsoft Power BI software and uploading live data from “Company X’s” finance and accounting systems.

“Company X” provided the data for the data analysis in MS Power BI. The data would be extracted using the BI tool for analysis and compiled from raw data using filters presented in such a way that it can be used and utilized again into the future. The benefits and the power of using the MS Power BI tool is that it can collect data and filter it very quickly without affecting the uploaded data itself. This feature of the tool will help the business to recreate business reports and visual presentations over and over again, to help amplify the main business issues that management should focus on

.

4.1.3 Analysing the data and comparing it to the previous data

Once the information has been collected, it will be analyzed, this will include all various images, charts, and conclusions from the data that was collected. One of the best ways to find out is to look at the method of gathering, filtering, and understanding and presenting data as fast and easy as possible, without having a knowledge of how to use the tools that are given.

4.1.4 Conclusion

After the data analysis, the conclusions must be created from the data to show “Company X” results of the research. During this research, it will be observed, how the collected data will be used in “Company X” today and in the future, as well as how using the research results could be used to improve other company’s finance systems. At this stage, it will also be checked if the data collected and analysed contains errors or anything that can provide incorrect information or conclusions.

4.2 Feedback

Finally, the finance director of “Company X” will provide feedback about the research to understand if it was successful. “Company X’s” feedback is used to evaluate and understand the thesis. The success of the research is to also see if “Company X’s” is satisfied with the outcome of the research, as well as how the thesis can provide material and help for other researchers in the future.

4.3 The conclusion of the research based on the data

When “Company X” has given their feedback on the data and researched data, it will be ascertain if the research was successful or not and if it provides an answer to the research question. This is important to determine if the research can be utilized by other companies in the future when deciding if there is a need to implement the business intelligence tools.

5 RESEARCH DATA

The data collection process began by gaining an access and logging into the MS Power BI, where it was possible to see what type of data has been integrated into the BI system as well where the data came from. “Company X” has already collected, integrated and presented all the required data that is needed for the data analysis as “Company X” will not allow any outside interaction with their online databases (IMAGE 1).

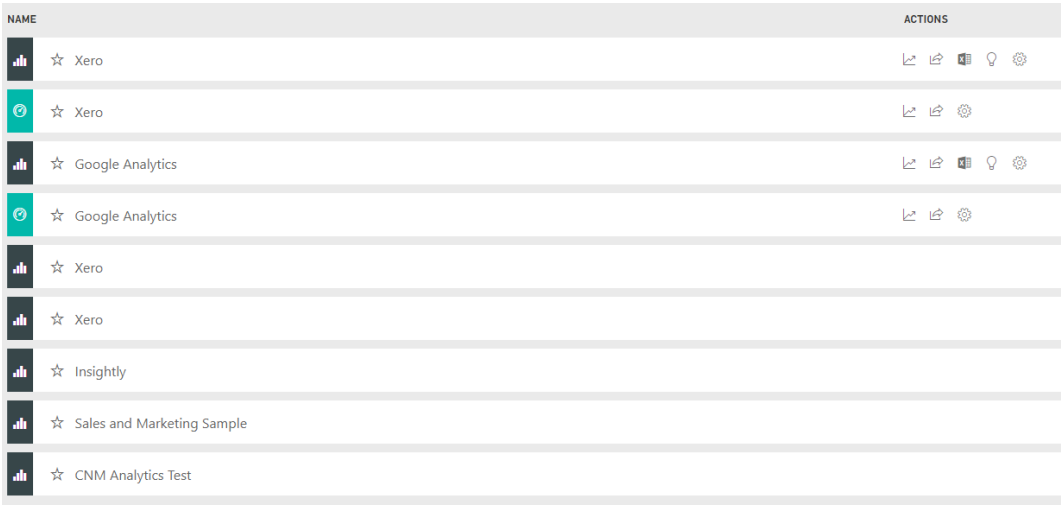

IMAGE 1. Microsoft Power BI Dashboard, showing recent data files (Microsoft Power BI. 2018.)

The Data for this will be collected, filtered and analyzed from Google Analytics and Xero accounting software. The purpose is to be able to present the data to a company with an easy to understand visual representation and accurate data information that can be used in the company’s business meetings. The data will be presented as Power BI reports instead of using Power BI dashboards.

To clarify, MS Power BI has two different options to display data from data sources as dashboards and reports. A Power BI report (IMAGE 2) is a multi-perspective view into of data, which is represented by different visual representation. The report page also usually contains one more tab of reports, which form together a collection of reports.

In “Company X” each of report page tabs were divided to contain information that were relevant with each other’s, such as in Total Users (30 days) report (Appendix 1 p.26), the report only contained information and details regarding that were relevant with each

other's. The next report tab followed with the same logic, this way the user will find every relevant information in one report.

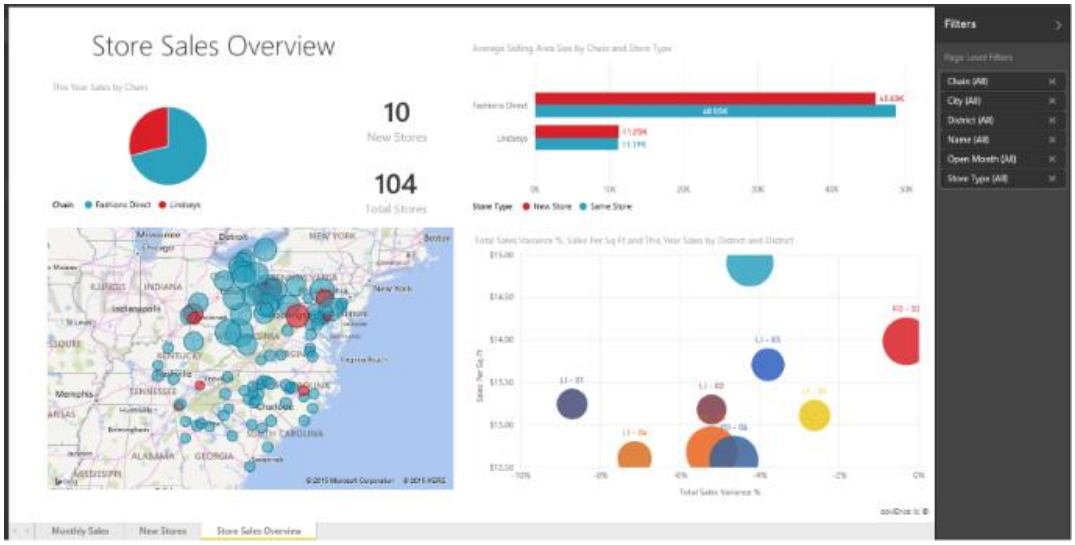

IMAGE 2. Power BI Report (Microsoft Power BI 2018.)

The Power BI report can contain a single visualising page or multiple pages of different visualizations. (Microsoft 2018). Power BI dashboard (IMAGE 3) is a single page collection of visualising reports that have been created into one collection.

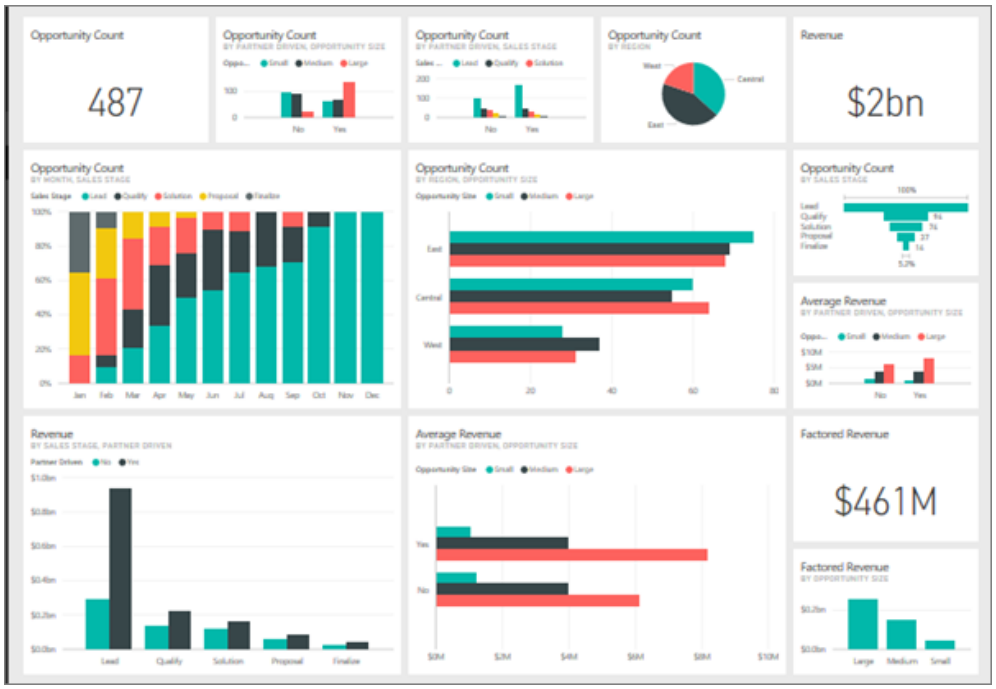

IMAGE 3. Power BI Dashboard (Microsoft Power BI 2018.)

The Power BI dashboard is a “summary” of many different Power BI reports, which are reports that are made from single or multiple data sources (IMAGE 4). The dashboard’s point is to create an interface, where users can interact with the reports and locate every report from any database in a one place.

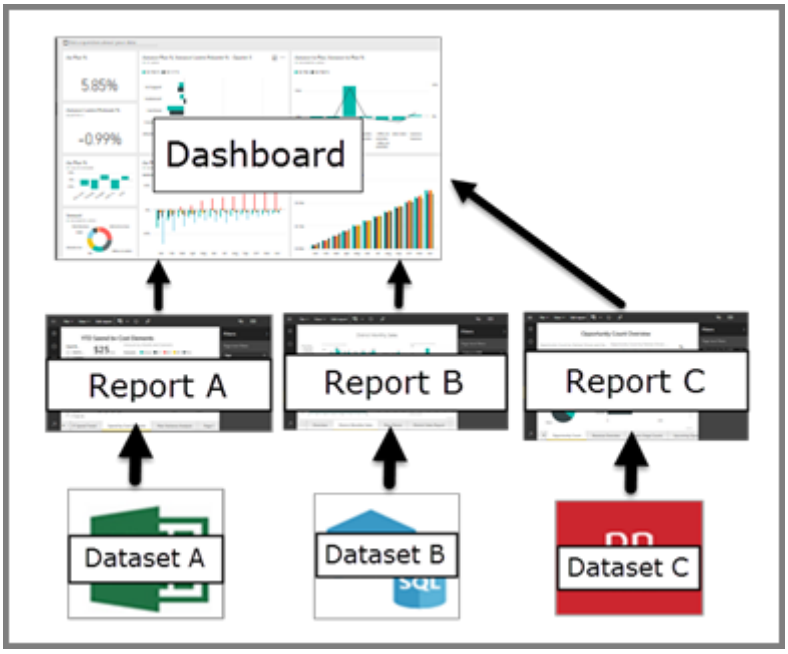

IMAGE 4. Power BI dashboards and reports summary (Microsoft Power BI 2018.)

After the research “Company X” will provide feedback and summarise if the research results are accurate with their own conclusions and if “Company X” can utilize the results in their business. The feedback from “Company X” will also help to determine if the research results were performed accurately.

5.1 Interview with the finance director

The finance director was interviewed to understand the situation with “Company X” and the decision for implementing the BI tool. The interview answers will help later, while “Company X’s” data is collected, filtered and analyzed. The finance director of “Company X” wishes to stay anonymous during this interview and will be referred as the finance director. Reasons for the BI implementation was according to the finance director, from a business point of view, was to get a business insight of the consumer behavior. “Company X” also needed to develop their products and services to match their clients need as well to understand current consumption and patterns of their

clients. “Company X” also needed to anticipate the future trends to increase their profitability.

Regarding the interview with the head finance director, who stated the following:

> One of the main advantages of using business intelligence tools is the analytics, in that not only can we better analyze current consumer buying patterns and trends, but we can also better understand what our consumers are buying.

Business intelligence as a tool has helped “Company X” to focus on what are the most important products and services that they need to focus on, and by understanding which products and services, are best performers. “Company X” can now provide solutions to their business problems and improve on it at the same time and during the process.

> If there is an error in our accounts, we need to drill down to invoicing or billing level, in fact right down to the Profit & Loss account. With BI we can you do this in a few clicks and/or if need be, re-run a report which could take forever, this can be done in seconds in a BI tool.

In addition to developing better products and services, “Company X” can turn their data into actionable information in terms of strategic development effort and business planning, by making important connections in the different areas of our organization as they evolve and grow the business into the future.

> Having the ability to share business intelligence and information across different departments in our organization, will help us to save time on reporting processes, analytics, reduce duplication of effort, roles, and responsibilities. This in turn will help us to improve the accuracy and usefulness of the data generated by different departments.

Comparing the past, “Company X’s” only way to filter data was manually, by way of data capture, creating spreadsheets, filters and pivot tables, which is an intense task by default, issues with data integrity and accuracy problems, inability and effort to keep data up to date and relevant, were an issue with “Company X”.

Lastly, the finance director of “Company X” strongly emphasises that the BI tool has been beneficial to “Company X” and if any company is to remain relevant and competitive in today’s world, BI tools are a mandatory tool-set of the business enterprise.

> Last, but not least, business intelligence in conjunction with CRM, it can be used to gain insight into what our competitors are doing and strengthens our postilion and ability to make more informed business decisions to plan into the future.

The interview was extremely helpful, and the finance director of “Company X” provided answers that explained “Company X’s” current situation and the need for BI tools.

5.2 Data from Google Analytics

Google Analytics by Google is a free website data tool that allows the website owner to track the website and the user base. This tool requires that a script or code has been inserted to the website correctly, that will track and gather information when users browse and use the website. Google Analytics will show the following gathered information from the website, depending that the tracking script is working:

- How the users navigate to the website
- Online marketing campaign success based on the traffic of the website
- Userbase tracking and categorization based on different filters
- Integration with other Google services
- What the users do on the website and where they are located from

Google Analytics allow users to get a basic understanding of the websites current situation, however a user must manually export the data reports and “tell” Google Analytics what type of filters must be used and presented. The reports are generated without any customisation options and the user is forced to present reports as they come from the Google Analytics.

In this case, the Google Analytics data has been directly accessed from MS Power BI, which does not alter or change the data that is being accessed from Google’s own

servers. MS Power BI allows users to connect databases between MS Power BI and Google Analytic Services without any data loss or interference (IMAGE 5), where MS Power BI “asks” users to choose data importing method (IMAGE 6).

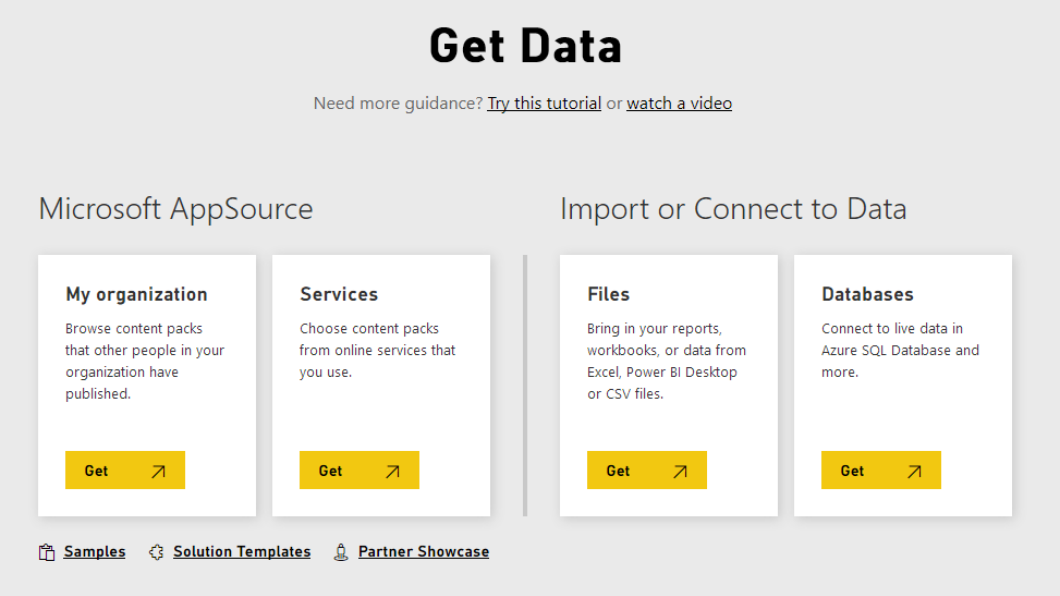

IMAGE 5. Data importing options and possibilities in Microsoft Power BI. (Microsoft Power BI. 2018.)

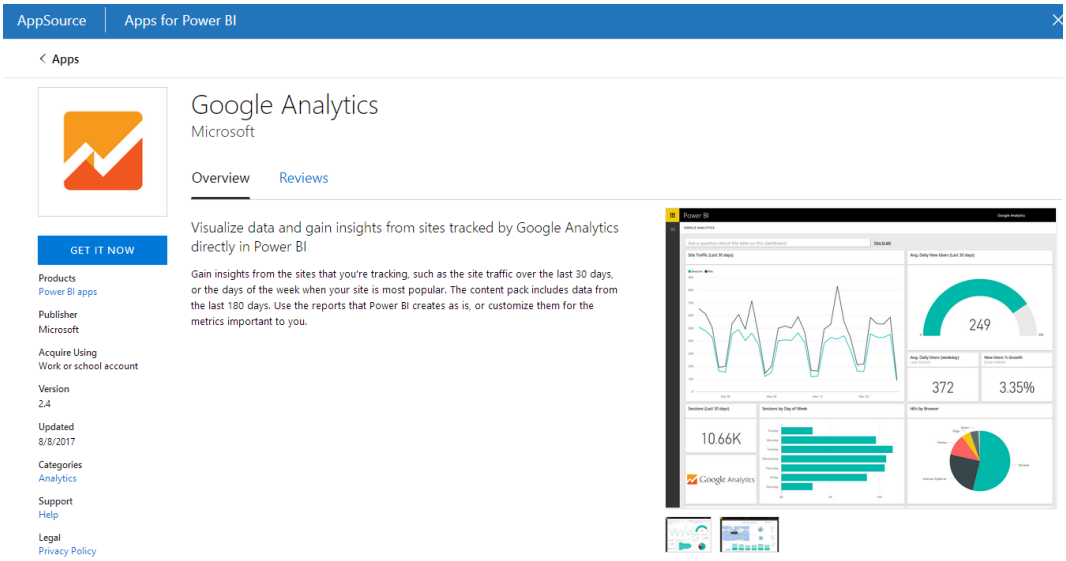

IMAGE 6. Loading up a Google Analytic data into the Microsoft Power BI, using Services option in the previous image. (Microsoft Power BI. 2018.)

MS Power BI automatically loads up the data into an easily understandable visual representation using different graphical tools, such as charts and tables. The finance

director of “Company X” has already set up some base filters in their Google Analytics report, to show what they have tracked and filtered from the raw data, however for the research purposes, a completely new report and the document will be created.

“Company X” has given a permission to compare their own MS Power BI data to their client’s Google Analytics data reports (The client’s company or provided data will not be shown or discussed in detail in the thesis, to protect “Company X” as well the client’s data). “Company X” shows how the Google Analytic reports are filtered and what type of information clients can see from the reports.

From the client’s documents, it can be determined that Google Analytics service offers ready- made graphical statistics and visual representations to their user base, however, it requires that the user themselves know how their data should be presented when the data is filtered and made into a report format.

This means that Google Analytics service offers basic visual representation, which requires users to manually set reports and filters to make it an easily understandable document.

In MS Power BI tool, it is possible to create easily understandable and different visual representations without manually editing the data or filters, however, it still does require that the user knows what type of data is needed to be presented and filtered. The user also requires an understanding of the company’s requirements and needs for their own reports. MS Power BI offers easy options for different tables, graphs, and metrics with easy filters and rule sets. The tool also allows users to customize the data presentation form with colours, text, and images (IMAGE 7), where the user must create a visual

representation from the data that has been imported), however it is much more user-friendly compared with Google Analytics.

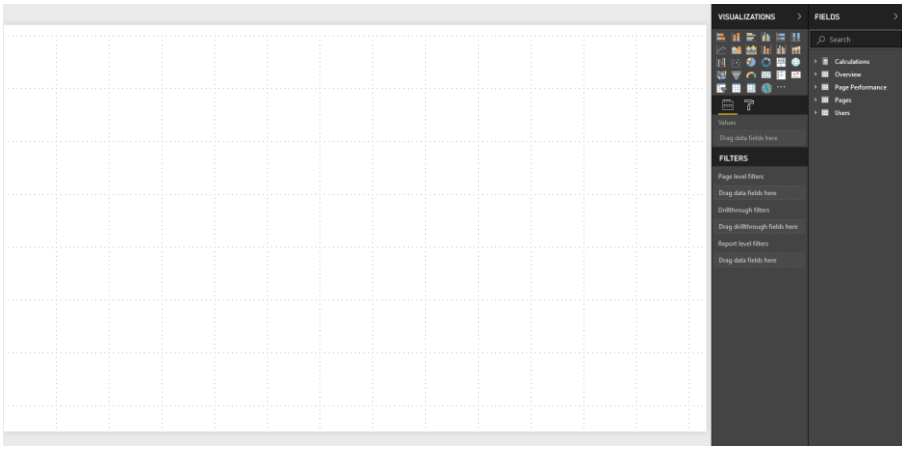

IMAGE 7. Empty Dataset that shows an empty screen with no information yet brought from the Google Analytics Database. (Microsoft Power BI. 2018.)

The filters in MS Power BI are determined from data source information and the MS Power BI is “intelligent” enough to read, understand and present this to the user without any manual work.

5.2.1 Gathered data from Google Analytics with MS Power BI

With a combination of Google Analytics and MS Power BI, it is possible to see and understand the userbase, traffic, performance and much more, depending on the filters of the company’s website.

The following results will be taken from the database and made into a presentation of the for better understanding:

- Site Traffic
- System Usage
- Total Users
- Page Performance
- Top Pages

The data will be presented in a Power BI report form with easily understood legends as well with a report title. This report will contain 5 pages.

“Company X” has given permission to show collected data and reports, however, they have not given permission to show any numbers or information. This information could endanger the company or expose their data to everyone. For this reason, the reports and statistics will be blurred and discussed with the finance director, to make sure which data material is allowed to be published.

5.2.2 Gathered data from Xero with MS Power BI

“Company X” has also connected their finance system Xero database to MS Power BI. Unlike with Google Analytics, “Company X” has not given permission to publish the data reports and collected data results. However, the collected data will be discussed and analyzed.

Xero’s filtered data can show the company’s following information

- Daily Cash Flow
- Balance
- Cash In and Out
- Invoice and Bills due dates
- Revenue and % growth
- Expenses and % growth
- Net Profit monthly and annually
- Monthly Profit and Loss
- Top Expenses
- Outstanding and Overdue Receivables
- Outstanding and Overdue Payables
- Monthly Sales
- Profit and Loss
- Customers Details

Filtering raw data from Xero is challenging as Xero can provide a lot of information that can be filtered and presented as needed. However, once the data has been filtered and presented visually, it will automatically update every time the original data changes.

6 DATA ANALYSIS AND DISCUSSION

The gathered data will be analyzed and then presented to “Company X”. The aim is to show that moving from creating reports manually to using BI tools has had a positive impact on “Company X”. The data charts can be found in the Appendices.

6.1 Data from the Google Analytics

The data from Google Analytics shows many different results, the most noticeable is the fluctuation in the Total Users (30 Days) line chart (Appendix 1 p.26). Comparing the results to last year’s results, the reports show equivalent results, meaning that the user base of the website fluctuates based on the website and app development market. This can also be seen in Sites Traffic (90 Days) line chart (Appendix 2 p.27), as the results show that traffic is based on the potential customer’s needs.

System Usage report (Appendix 3 p.28) shows that over half of the users use Windows, mainly Google Chrome to access the site. MS Power BI is also capable of showing where the users are located based on the operating system and/or browser. For example, users with Chrome OS are only located either in the United States or the Philippines. Another interesting point in this report (Appendix 3 p.28) is that the main user base is using Google Chrome as a browser, meaning that “Company X” will have to make sure their services are supporting Google Chrome browsers (as well as other browsers).

Page Performance report (Appendix 4 p.29) shows “Company X’s” website rarely malfunctions in terms of functionality and performance. However, these have decreased when comparing the results from 2018 to previous year, 2017.

The homepage is still the most viewed page according to the Top Pages (180 days) report (Appendix 5 p.30). This shows that users who navigate to the site are making a crucial decision whether they will continue to navigate the site and contact “Company X” or exit the site. This means that companies that have a website must make sure that their homepage will attract and convince potential customers to do business with the companies.

6.2 Data from Xero

The first report from Xero, shows that the “Company X” has a steady cash flow compared to the previous year’s results. However, there are months when there is a huge fluctuation in the cash in and cash out results. This is mainly because the “Company X’s” product and services orders change every month due to the client’s needs. It also highlights that clients are not always paying on time and there is a delay in payments, which hugely affects “Company X’s” cash flow.

Data from Xero shows that despite the fact that “Company X” does business internationally, their customers mainly come from the same continent where they are located. They do however have clients in Europe and America. Other results from this report (Customers) is that Power BI can show (from Xero) the customer's outstanding balances, which shows that there are clients who have still not paid “Company X”. It is also possible to see each month’s monthly sales and expenses which can be seen when comparing the cash in and cash out tables.

6.3 Feedback from “Company X”

Unfortunately, the finance director of “Company X” was unavailable for review and final feedback of the thesis results. This was due to the fact that “Company X” is located in South Africa and they were busy with financial year end and a company audit. However, an initial short discussion with the finance director confirmed that the thesis conducted on “Company X” has been beneficial from the point of view that it validated the importance and the business in using a BI tool such as MS Power BI.

6.4 Discussion

The findings of the thesis showed that implementing the MS Power BI helped “Company X” to improve its business, despite the current struggle in finance. Further research could be conducted by studying other companies that have not yet implemented any kind of BI tools. Alternatively, the research could be approached differently by including another case study company as a point of reference with the same key factors but using different BI tools.

The current results for this thesis research and collection process involving data and the program used to source the data, may result in some inaccuracies in terms of the data held in the source directories and/or repositories, and therefore data integrity may be questionable. It is therefore likely that the data when collected, filtered and/or presented that the thesis results might also not be 100% in terms of accuracy.

However, having very little experience in terms of data collection, demonstrated how with simple filtering to create reports can be easily and quickly constructed without any knowledge on how to use BI tools to create reports.

The research, although narrowly focused around a commercial and proprietary solution does not focus on other proprietary solution options and open-source solutions.

7 CONCLUSION

Conclusions from the thesis research and available reports have shown many results. The first result can be seen in how quickly and easily the MS Power BI pulls data from live database environment without affecting the main source in case the user makes a mistake during the filtering and reporting phase.

Secondly, the reports can easily be filtered without knowledge of the program, however, it will take some time to get used to the program as well as filtering the data in the format that the user wishes to present and report. Lastly, MS Power BI offers a quick solution to traditional data filtering and reporting.

The research question was, how implementing Microsoft Power Business Intelligence Improves a company's business?

The answer for this is as follows: Implementation of the Microsoft Power Business Intelligence has helped "Company X" to understand their current business situation in the market, in terms of the customers and their needs. "Company X" has changed their course from products and services that were profitable but took longer to produce, to products and services that are affordable (but not as profitable as previous products and services) and quick to produce and provide to the customers that need it.

"Company X" is also able to see their reports in real-time as the days pass, where as before, progress had to be manually updated and transferred to the reports from raw data.

Finally, "Company X" has been able to understand their situation better when it comes to their business, finance, and products and services. However, "Company X" is in an inconvenient situation as cash flow is the biggest challenge for "Company X", especially during this time as "Company X" changes from their main products and services, to new products and services that are affordable for the customer, but also for "Company X" to produce and market.

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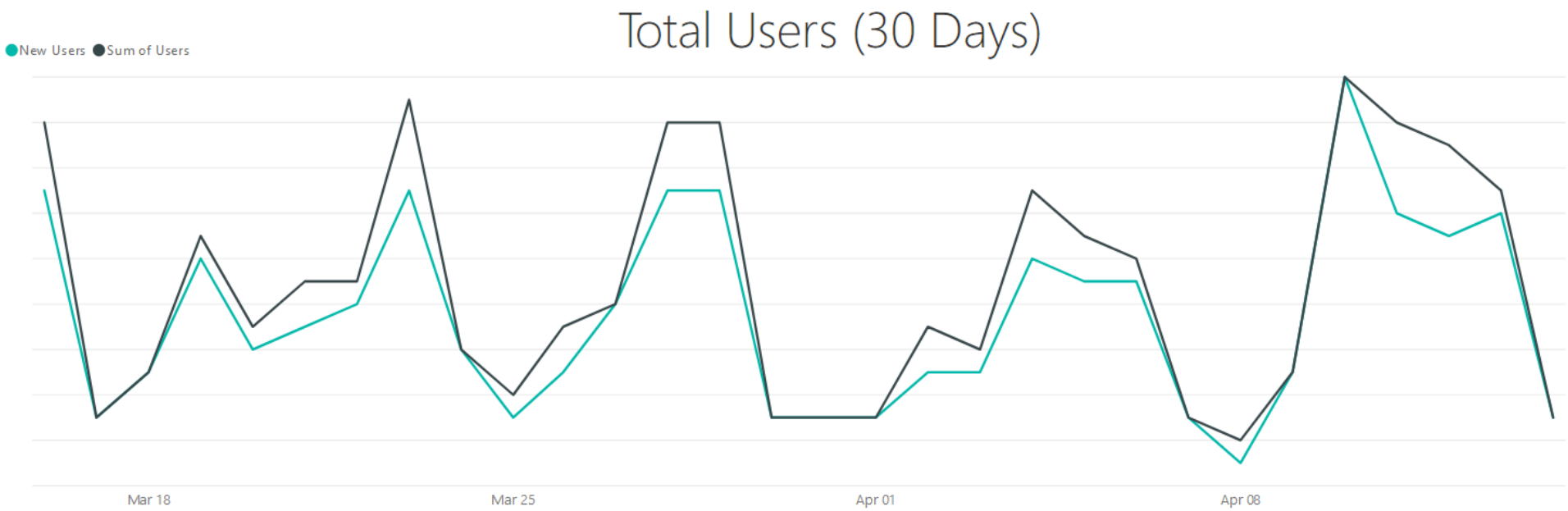
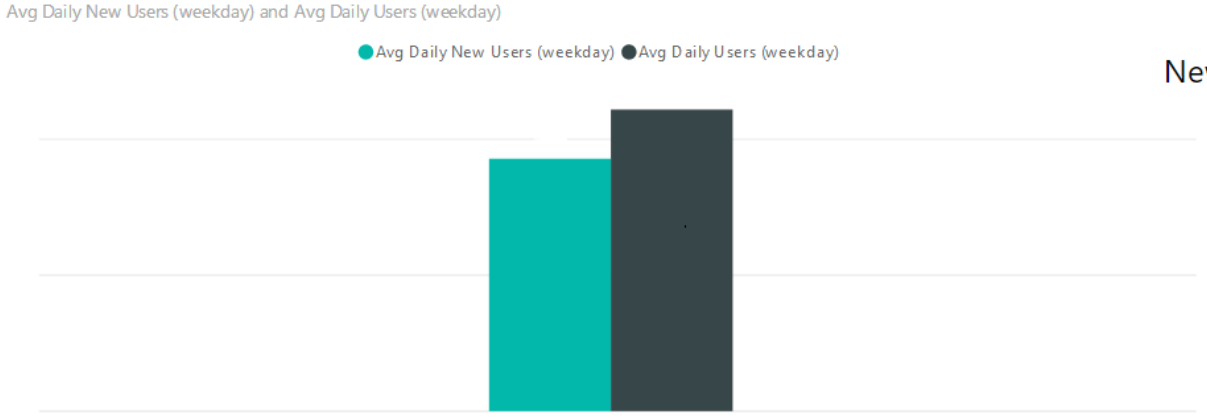
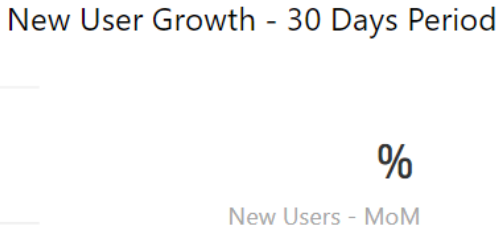
APPENDICES

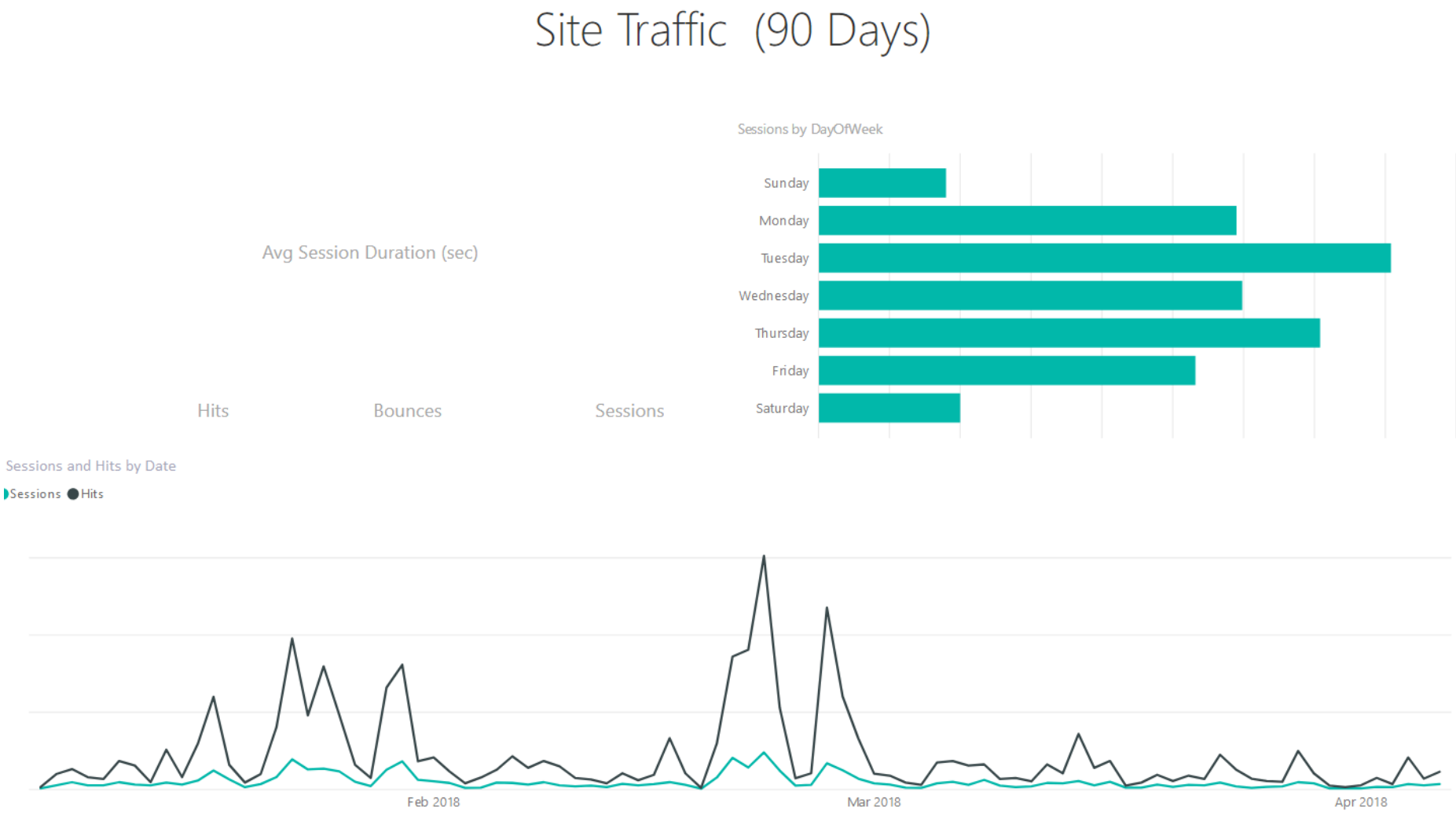
APPENDIX 1. Google Analytical Total User Chart Report



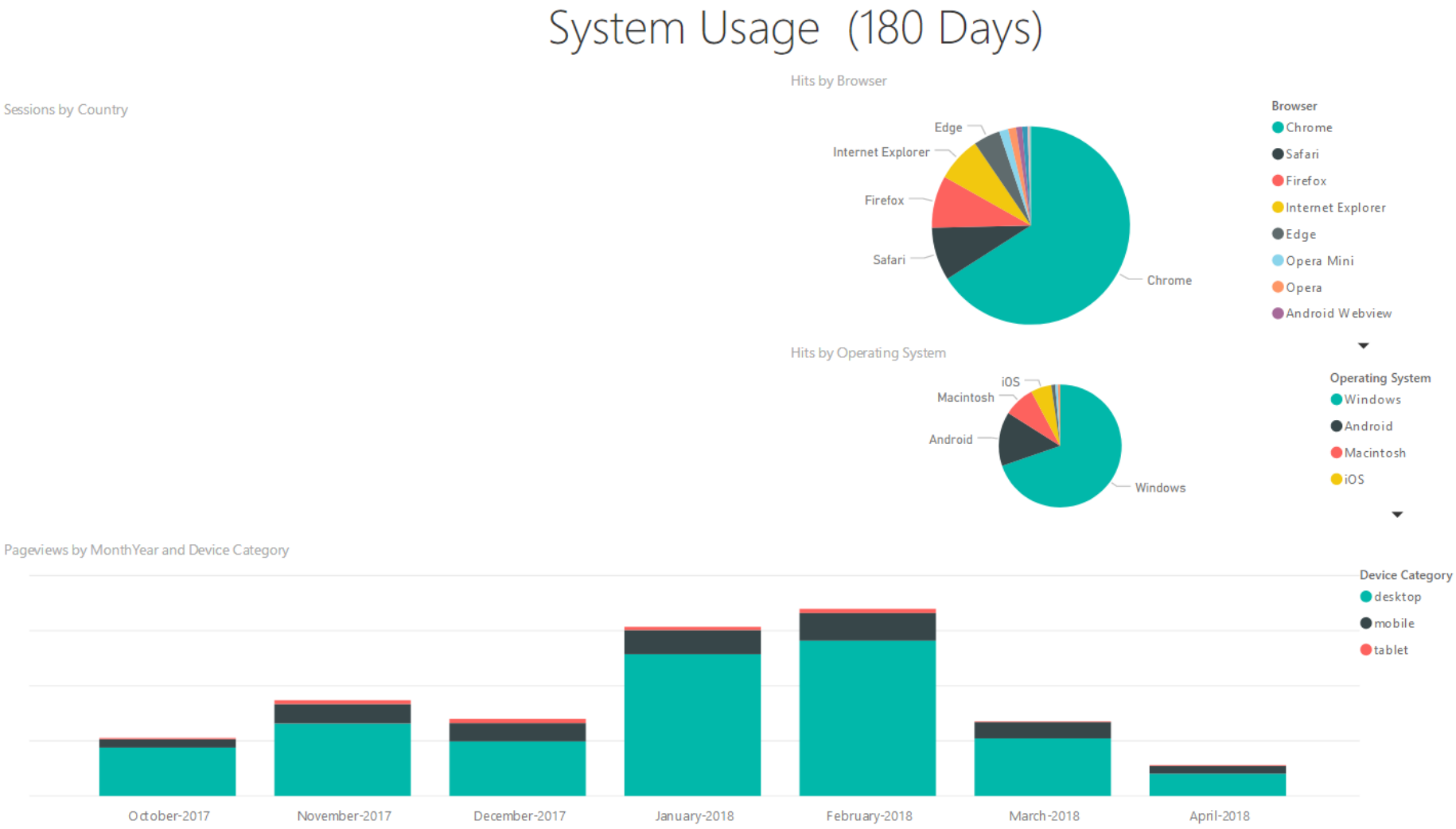




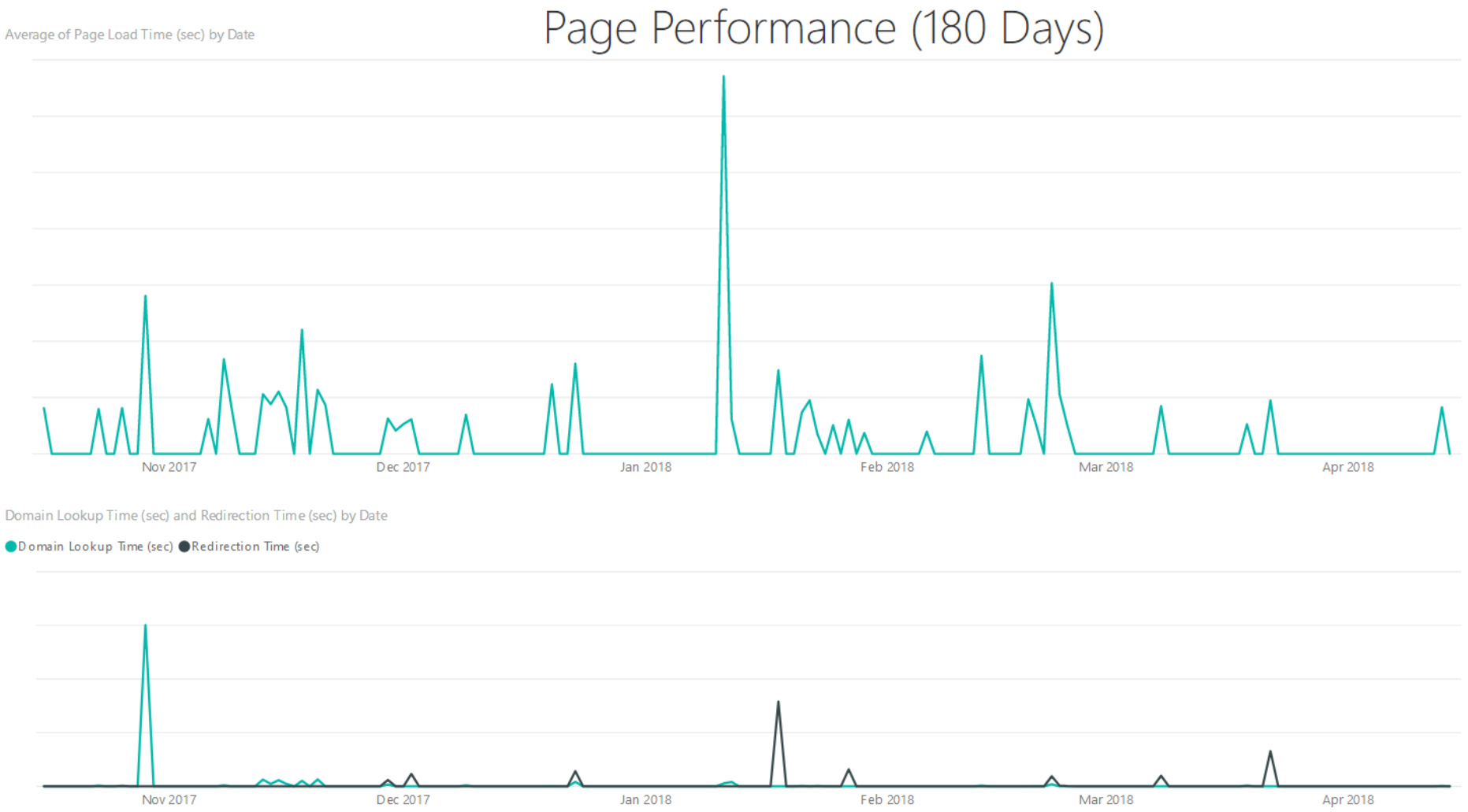
APPENDIX 2. Google Analytical Site Traffic Chart Report



APPENDIX 3. Google Analytical System Usage Chart Report



APPENDIX 4. Google Analytical Page Performance Chart Report



APPENDIX 5. Google Analytical Top Pages Chart Report